CLAIM AMENDMENTS

1. *(Currently amended)* A method for producing a population of cells ~~that is at least 75% homogeneous for a particular cell type, comprising~~ containing 2% that express tyrosine hydroxylase, the method comprising:

a) providing a suspension of undifferentiated human embryonic stem (hES) cells that is free of feeder cells;

b) plating and culturing the suspended cells on a solid surface so that they differentiate without forming embryoid bodies; ~~and~~

c) culturing the plated cells in a medium containing a TGF-β Superfamily Antagonist; and

d) harvesting ~~differentiated~~ a population of neural cells from the solid surface, wherein at least ~~75% of the harvested cell population is homogeneous for said cell type~~ 2% of the cells express tyrosine hydroxylase.

2. *(Currently amended)* A method for producing a population of cells ~~that is at least 75% homogeneous for a particular cell type, comprising~~ containing 2% that express tyrosine hydroxylase, the method comprising:

a) ~~culturing undifferentiated hES cells on~~ obtaining a population of hES cells plated onto a solid surface in an environment essentially free of feeder cells;

b) changing medium used to culture the cells to a medium containing a TGF-β Superfamily Antagonist, so that ~~they~~ the cells differentiate before there is overgrowth or formation of colonies; and

d) harvesting ~~differentiated~~ a population of neural cells from the solid surface, wherein at least ~~75% of the harvested cell population is homogeneous for said cell type~~ 2% of the cells express tyrosine hydroxylase.

3. *CANCELLED*

4. *(Previously presented)* The method of claim 1, wherein the hES cells are plated on a solid surface without any extracellular matrix.

5. *(Previously presented)* The method of claim 1, wherein the solid surface comprises a polycation.

6. *(Previously presented)* The method of claim 5, wherein the polycation is polyornithine or polylysine.

7 to 8. *CANCELLED*

9. *(Original)* The method of claim 2, wherein the changed medium is essentially free of fibroblast growth factor.

10. *(Original)* The method of claim 2, wherein the changed medium contains Brain Derived Neurotrophic Factor (BDNF) or Neutrotrophin-3 (NT-3).

11. *(Currently amended)* The method of claim 2, wherein the ~~changed medium contains~~ TGF-β Superfamily Antagonist is noggin or follistatin.

12. *CANCELLED*

13 to 15. *CANCELLED*

16. *CANCELLED*

17. *(Previously presented)* The method of claim 1, wherein the differentiated cells are ~~neurons or glial cells~~ identifiable as neural cells by the criteria that at least 50% of the cells express polysialylated NCAM, at least 50% of the cells express β-tubulin III, and at least 10% of the cells express microtubule-associated protein 2 (MAP-2).

18. *(Original)* The method of claim 17, wherein at least ~10% of the cells staining positive for MAP-2 are also positive for tyrosine hydroxylase.

19 to 22. *CANCELLED*

23 to 28. *CANCELLED*

29. *(Currently amended)* The method of ~~claim 28~~ claim 1, further comprising combining the cells of claim 28 with a test compound, determining any phenotypic or metabolic changes in the cell that result from contact with the compound, and correlating the change with cellular toxicity or modulation.

30. *(New)* The method of claim 1, wherein the TGF-β Superfamily Antagonist is noggin or follistatin.

31. *(New)* The method of claim 1, wherein the medium further contains a neurotrophin.

32. *(New)* The method of claim 31 wherein the neurotrophin is neurotrophin 3 (NT-3) or brain derived neurotrophic factor (BDNF).